

Management of A *Rūksha Dagdha Vrana* by Treatment Procedures used in *Rajasekara* Tradition - A Case Study

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ABSTRACT

Burn injuries are most devastating and painful condition causing major physical, mental, emotional and social trauma. In Sri Lanka, ~10 000 injuries and 100 deaths are burn related annually. Affected patients may lead into post burn complications like contractures, pigmented scar and keloid formation. This study was done in search of more effective, eco-friendly and cost effective way to treat burns and to avoid post burn complications. A case report of second degree burn has been presented here. A male patient of 43 years of age presented with complaints of burns over both upper limbs and face due to a burst gas stove. He was associated with pain, burning sensation and slight discharge. The patient was treated with polyherbal internal and external medications used in *Rajasekara* tradition for a period of 21 days. Changes in subjective and objective parameters were observed during treatments and for a follow up period of 2 weeks. Pain and burning sensation were completely relieved on day 14. Oedematous red coloured wound presented at the beginning was minimal with the treatments. Appearance of healthy granulation tissue was present at the end of treatments. No post burn complications like contractures of the skin and keloid formation were identified during follow up period of 2 weeks. *Sulahara*, *vedanasthapana* and *ushna guna* of ingredients in formulations might support in subsiding pain while *sheeta virya* benefited in relieving burning sensation. *Kasaya rasa*, *vranaropaka*, *vranashodana*, *snehana*, *krimihara*, *tvagdosahara*, *varnya*, *bhutaghna*, *lekhana guna* facilitated in proper burn wound healing without post burn complications.

KEYWORDS: *Rūksha dagdha vrana*, Post burn complications, Traditional medicine

1. INTRODUCTION

Burns are a significant cause of morbidity and mortality worldwide. Fire-related burns account for 10 million disability-adjusted life-years lost worldwide annually (WHO, 2003). The impact of physical disfigurement due to burns is far reaching, as social stigma may lead to isolation and other psychological impairments limiting one's productivity (WHO, 2008). In Sri Lanka, ~10 000 injuries and 100 deaths are burn related, costing US\$1 million annually (Lau, 2006).

Sri Lanka developed its own medical system based on a series of prescriptions handed down the generations to generation over a period of 3000 years. Indigenous medicine of Sri Lanka called *Desiya chikitsa* was before 8000 – 10 000 years ago (Samaranayaka, 2017). *Rajasekara* tradition of burn treatments is such a generation in Sri Lanka which are continuing their special field of *deshiya chikitsa* even today. *Rajasekara* tradition treats both physical and mental condition of the patient. They treat for psychology by chanting *mantras* which has influence on the relief of the symptoms. Speciality of this tradition is curing the burnt individual without any post burn deformities using their timely proven treatment modalities.

Word *Dewum pilissum* has two different meanings. *Dewum* means touching the skin with heated objects. Damage only to the first layer of the skin. In *Pilissum*, damage occurs in more

than one layer of the skin. *Ruksha dagdha* are burn injuries with dry matters; gunpowder, lightening, electricity, explosives. *Drava dagdha* are burn injuries with hot water, warm honey, warm gruel, tar, warm oil. In traditional system of medicine stages of burns are classified as *dva dagdha*, *mamsa dagdha*, *shira dagdha*, *snayu dagdha*, *sendhi dagdha*, *marma dagdha*, *indriya dagdha*.

Burn injury involves complex pathology. Burn patients are more predisposed for infection due to suppressed immunity. Burn wound is a fertile land for the growth of various microorganisms. Due to more or less destruction of microcirculation in the burnt area, systemic antibiotics are not very much effective in treating local wound infections. Also the rise of antibiotic resistant organisms, is posing a great problem in use of systemic antibiotics. (Dhrubajyoti&Kumar, 2018). Affected patients may land into post burn complications like keloid formation, contractures, hypo or hyper pigmented cars (Vishwas et al, 2016). Hence there is always a space for more effective, eco-friendly and cost effective way to treat burn injuries avoiding post burn complications.

Thel kira and medicinal oil are two formulations of herbal preparations used by *Rajasekara* tradition for all types of dry heat burn wounds over the generations. *Thel kira* is a

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composition of *Amu kaha* (*Curcuma longa*), *Dan* (*Syzygium cumini*), king coconut (*Cocos nucifera*). Medicinal oil composed of *pokuru vada* (*Hibiscus rosa sinensis*), *kaluduru* (*Nigella sativa*), *Amu kaha* (*Curcuma longa*), *tila taila* (Sesame oil), cow's milk. Decoction used has *venivelgeta*, *kottamalli*, *beli mul* and *vee pori*. These polyherbal internal and external medications are having both *sodhana* and *ropana* actions which in turn results in proper healing of the wound without complications. The case reported here with the informed consent of the second degree burnt patient was observed for the effect of treatment procedures used in *Rajasekara* tradition.

1.1. Aims and objectives

To study the effect of *thel kira*, herbal oil preparation and decoction used in *Rajasekara* tradition in the management of *Rūksha Dagdha Vrana*.

2. MATERIALS AND METHODOLOGY

2.1. Case report

A male patient of 43 years of age came with complaints of burns over both upper limbs and face due to burst gas stove in the morning. Patient was having pain, burning sensation and a slight discharge at wounds.

Past history- patient was not having a history of diabetes, hypertension, dyslipidaemia.

On examination-

There was blister formation on both upper limbs and face. Mild discharge was present over the wound. No purulent discharge was seen.

All other systemic examinations are intact.

2.2. Preparation of thel kira

Barks of *Dan* (*Syzygium cumini*) – 2 pounds

Amu Kaha (*Curcuma longa*) – 1 pound

king coconut (*Cocos nucifera*) – 2 nuts All the collected drugs were made authenticated for its identity and genuinity by Dr. Rajasekara. All the materials were weighed and cleaned properly. *Amu kaha* (*Curcuma longa*) were grounded and put into another vessel. 2 nuts of king coconut were scraped and juice was collected. Fresh juices of these three ingredients were mixed well. The mixture was kept under sunlight for 1 day. The oil is ready to use from the following day. This is known as *thel kira*.

2.3. Preparation of the oil to be applied.

Pokuru vada (*Hibiscus rosa-sinensis*) - 1 pound

kaluduru (*Nigella sativa*), - 2 *kalan*

Amu kaha (*Curcuma longa*) – 250g

Tila taila (sesame oil) – 1 bottle

Cow's milk – 1 bottle

All the collected drugs were made authenticated for its identity and genuinity by Dr. Rajasekara. All the materials were weighed and cleaned properly. Fresh turmeric was chopped and cold extract was taken. Buds of *Hibiscus* were added to 1500 ml of boiled water and filtered. Cow's milk, sesame oil, cold extract of turmeric was added to the filtration.

This mixture was heated in mild flame. The heating was continued by adding *kaluduru* until the whole mixture comes to *khara paka*.

2.4. Treatment given

Patient was advised to admit to Rajasekara burn hospital for the treatments.

1st week: Sufficient quantity of *thel kira* was applied using a feather of a hen.

Then medicinal oil was applied over the wound every morning and evening. And ensured that it spreads uniformly all over the surface of the wounds.

After the application of *thel kira* and medicinal oil over the wound, patient was advised to keep the wound uncovered but not to expose the wound to dirty surroundings or contact with any materials like soil, dust etc.

Wounds were fumigated with *hal dummala*.

At 6 am/ 6 pm; He was given the decoction made with *venivelgeta*, *kottamalli*, *vee pori*, *beli mul*. Decoction has to be prepared by taking 2 *kalan* of each ingredient and boil 4 parts of water into 2 parts. Patient was asked to take ½ parts once in 3 hours.

At 10am / 4pm; 1 teaspoonful of *Talisadi curna* with bee honey was given to lick.

Patient was advised to have *patya ahara* and *viharana*.

2nd week: *Tel kira* and medicinal oil were applied and fumigated with *hal dummala* in every morning and evening.

At 6 am/ 6 pm; She was given the decoction made with *venivelgeta*, *kottamalli*, *vee pori*, *beli mul*.

3rd week: Application of *tel kira*, medicinal oil and fumigation were continued.

As his wounds got cured he was discharged from the hospital and asked him to visit the physician for further follow up.

Observations on the subjective and objective changes with the treatment were made for 3 weeks.

Furthermore, patient was observed for a follow up period of 2 weeks.

During these period he was advised to have *patya ahara* and *viharana* as follows.

patya aharaviharana - porridge processed with rice, vegetable soup, Rice with gravy, Fresh fruit juice

Advised to drink luke warm water.

Apatya aharaviharana- prawn, cuttlefish, lobster, tuna, pickles, tomatoes, breadfruit.

Criteria for the assessment of result

Subjective Parameters

1. Pain

The changes in the pain with the treatment were considered as follows.

The pain which was intolerable, constant and makes to seek medical help as early possible was considered as severe and denoted as - III

Constant, tolerable pain and subject can wait even for some days in seeking medical help was considered as moderate and denoted as -II

The pain which was tolerable, negligible considered as mild and was denoted as -I

The absence of pain is considered as nil and denoted as - 0

2. Burning sensation

The change in the burning sensation during the treatment was considered as follows.

The burning sensation which was intolerable, constant and makes the patient seek medical help as earlier possible is considered as severe and denoted as -III

The burning sensation which was constant and tolerable and subject can even for some days in seeking medical help is considered as moderate and denoted as- II

The burning sensation which was tolerable, negligible is considered as mild and denoted as-I

The absence of burning sensation is considered as nil and denoted as - 0

Objective parameters

Discharge at the wound

Oedema and redness around the wound.

Colour of base of the wound

3. RESULTS AND OBSERAVATIONS

Table 1- Assessment of subjective criteria

	Before treatments	On day 14	On day 21
Pain	III	0	0
Burning sensation	III	0	0

Table 2- Assessment of objective criteria

	Before treatments	On day 14	On day 21
Discharge at the wound	Slight discharge not purulent	No discharge	No discharge
Oedema and redness around wound	Significant oedematous edges.	Oedema was minimal showing epithelium	Absence
Appearance Quantity and colour of wound base	Redness & presence of raw surface of wound	Appearance of granulation tissue	Healthy granulation tissue and signs of epithelization of margins

No post burn complications like contractures of the skin and keloid formation were identified during follow up period of 2 weeks.

4. DISCUSSION

4.1. Discussion

Rūksha dagdha vranawas managed by combination of tropical and systemic agents. Local application of medicine has a great role in burn wound management. *Thel kira* and medicinal oil perform various roles in the process of healing the wound. Probable mode of action of each ingredient are as follows.

The probable action due to which pain was reduced in patient could be because *thel kira* and medicinal oil have *usna* (hot), and *sulahara* (pain relieving) properties. *Kaluduru*, *amu kaha* and *tila taila* have *usna guna*. At the same time *Kaluduru*, *Amu kaha* and *tila taila* have *sulahara* and *vedanastapaka* properties¹ (*Ayurveda pharmacopoeia* AP, 1979). Regression of pain may be also due to presence of *sneha dravya* in the preparation. *Tila taila* and cow's milk

have *snehana guna* (AP, 1979). *Sheeta* (cooling) *virya* of *dan*, king coconut, *Hibiscus*, cow's milk could have reduced *daha* (burning sensation) in *dagdha vrana* (AP, 1979).

Discharge of *dagdha vrana* could have subsided due to *ruksha*, *sthanmbhana* properties. *Kaluduru*, *Hibiscus*, *amu kaha*, *dan* have *ruksha guna* (AP, 1979). *Sthambhaka guna* of *dan*, *tila taila*, cow's milk might have helped to reduce discharge at the wound.

The likely action due to which floor reduced in patients could be because of *ruksha* (dry), *krimihara* (anti-microbial), *tvagdosahara* properties which might have lessened the slough in wound. *Kaluduru*, *Hibiscus*, *Amu kaha* and *dan* are said to be *ruksha* in property. *Dan*, *amu kaha* and *dan* possesses *tvagdosaharaguna* (AP, 1979).

Varnya property of *amu kaha* and *tila taila* might have assisted in deducting the discoloration of *vrana*.

Similarly, the potential action due to which healing took place in patient could be because of *Vranaropaka* (healing), *Sandhankara*, *Bhutaghna* (anti-microbial) and *snigdha* (moisturising) properties. *Amu kaha*, *tila taila* have *vrana sodhana* action (AP, 1979). *Amu kaha*, *tila taila*, cow's milk and king coconut are *vrana ropanain* action (AP, 1979). *Kasaya* and *lekhana* properties are removing dead, necrosed tissue from burn wound and facilitate formation of granulation tissue. *Dan* (*Syzygium cumini*), *Hibiscus rosa sinesis* have *kasaya rasa*² (*Aushadhiya shaka sangraha* ASS, 2001). *Kaluduru* and *amu kaha* have *lekhana* properties (AP, 1979).

Decoction is made of *venivelgeta*, *kottamalli*, *beli mul* and *vee pori*. *Venivelgeta* is having *raktha sodhaka* properties which promote wound healing. *Kottamalli* has *usna*, *snigdga guna* which subsides *vata*, *kasaya*, *madhura*, *tikta* properties which subsides *pitta* and *tikta*, *katu*, *usna* properties which subsides *kapha* which in turn has *tridosa samaka dosa karma* (AP, 1979). *Usna guna* of *beli* relieves *vata* and *ruksha*, *laghu*, *kasaya*, *tikta* properties relieve *kapha* (AP, 1979). Vitiating *pitta* is responsible for *paka kriya* which by vitiating *rakta* forms *puya*. *Pitta samaka dravya* control upon the *paka kriya*, which results in subsidence of *srava*. Absence of *srava*, suggestive of the wound is devoid of infection.

Oil is non polar hydrophobic, insoluble in water and floats on water. It may prevent fluid loss from burn wound and lubricate the surface of wound. Oil layer prevents the entry of germs acting as a covering layer. Various fatty acids in it have better healing property and good absorption. The natural essential fatty acids in formulation easily penetrate into cell membrane to enhance drug penetration. As cell membrane is a phospholipid bilayer, it is non polar and hydrophobic. So non polar ingredients can easily penetrate the cell membrane (Courteny&Daniel, 2015).

Wound healing property of major phytoconstituents; flavonoids, Tannins and anthraquinones present in herbs augments healing process. Flavonoids and phytosterols in herbs promote epithelialization for wound healing process with increased capillary formulation and fibroblast proliferation enhancing the rate of epithelization (Norman & Christopher, 2008).

Antioxidants act as a scavenger and probably helped to remove free radicals as well as inhibited further generation

¹AP- *Ayurveda pharmacopoeia*

²ASS -*Aushadhiya shaka sangraha*

of free radicals (Faten et al, 2012). Anti-microbial activity which have the ability to disinfect and destroy microorganisms and to break biofilms which are formed by microorganisms. They reduce wound infection due to bactericidal action of drug (Kumar et al, 2007).

In view of such results it can be said that the *thelkira*, medicinal oil and decoction show equally encouraging results in proper wound healing without post burn complications

4.2. Conclusion

This case study reveals that burn wound treatment protocols used by *Rajasekara* tradition provide good and faster wound healing. It can help in minimizing post burn complications like contractures, keloid formation, hyper pigmentation and hypopigmentation.

4.3. Suggestions

Traditional burn treatments mention a lot of preparations for burn wound care over the generations. These medicines had been used in ancient times and pre-antibiotic era most probably with success. So there is a need of revalidating these preparations in terms of modern parameters and thus making them acceptable, accessible and available for the community.

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Figure 1- Burn wounds on the first visit

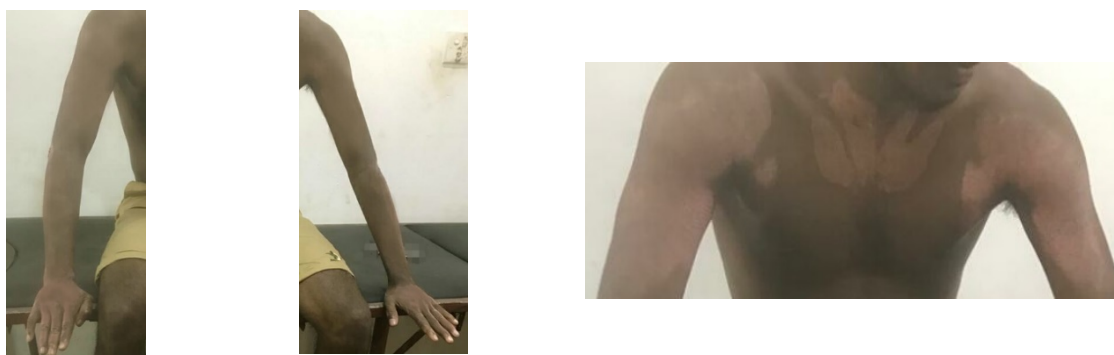


Figure 2- Burn wounds after treatments

	<i>Venivelgeta (Coscium fenestratum)</i> (AP, 1979)	<i>Kottamalli (Corriandrum sativum)</i> (AP, 1979)	<i>Beli mul (Aegle marmelos)</i> (AP, 1979)
<i>Rasa</i>	<i>tikta, kasaya</i>	<i>Madhura, katu, tikta, kasaya</i>	<i>kasaya, tikta</i>
<i>Guna</i>	<i>laghu, ruksha</i>	<i>laghu, snigdha</i>	<i>ruksha, laghu</i>
<i>Virya</i>	<i>Usna</i>	<i>Usna</i>	<i>usna</i>
<i>Vipaka</i>	<i>Katu</i>	<i>Madhura</i>	<i>katu</i>
<i>Dosa karma</i>	<i>kapha pittahara</i>	<i>tridosa samaka</i>	<i>kapha vata samaka</i>

Table 3- Rasa, guna, virya, vipaka, dosa karma of decoction

	<i>Hibiscus rosa sinesis</i> (ASS, 2001)	<i>Kaluduru (Nigella sativa)</i> (AP, 1979)	<i>Curcuma longa</i> (AP, 1979)	<i>Tila taila</i> (AP, 1979)	<i>Cow's milk</i> (AP, 1979)
<i>Rasa</i>	<i>Kasaya, tikta</i>	<i>Katu, tikta</i>	<i>Tikta, katu</i>	<i>Madhura</i>	<i>Madhura</i>
<i>Guna</i>	<i>Laghu, ruksha</i>	<i>Laghu, ruksa, tiksna</i>	<i>Ruksha, laghu</i>	<i>Guru, snigdha</i>	<i>Guru, snigdha</i>
<i>Virya</i>	<i>Sita</i>	<i>Usna</i>	<i>Usna</i>	<i>Usna</i>	<i>Sita</i>
<i>Vipaka</i>	<i>Katu</i>	<i>Katu</i>	<i>Katu</i>	<i>Madhura</i>	<i>Madhura</i>
<i>Prabhava</i>				<i>Kesya</i>	
<i>Dosa karma</i>	<i>Kapha pitta samaka</i>	<i>Kaphavata samana, pit vardhaka</i>	<i>Kapha vata samaka, pitrecaka</i>	<i>Vata samana</i>	<i>Vata pitta nasaka, kapha vardhaka</i>
<i>Bahya karma</i>		<i>Lekhana, sotahara, vedanastapana</i>	<i>Sotahara, vedana stapana, varnya, kustaghna, vrana sodhana, vrana ropana, lekhana</i>	<i>Snehana, vedana stapana, sandhaniya, vrana sodhana, vrana ropana</i>	<i>Snehana, sandhaniya, ropana</i>

Table 4- Rasa, guna, virya, vipaka, dosa karma of medicinal oil

	<i>Dan (Syzygium cumini)</i> (AP, 1979)	<i>Kingcoconut (Cocos nucifera)</i> (AP, 1979)	<i>Amu kaha (Curcumin longa)</i> (AP, 1979)
<i>Rasa</i>	<i>Kasaya, madhura, amla</i>	<i>Madhura</i>	<i>Tikta, katu</i>
<i>Guna</i>	<i>Laghu, ruksha</i>	<i>Guru, snigdha</i>	<i>Ruksha, laghu</i>
<i>Virya</i>	<i>Sita</i>	<i>Sita</i>	<i>Usna</i>
<i>Vipaka</i>	<i>Madhura</i>	<i>Madhura</i>	<i>Katu</i>
<i>Prabhava</i>		<i>Kesya</i>	
<i>Dosa karma</i>	<i>Kapha pitta samana</i>	<i>vatapitta samana</i>	<i>Kaphavata samaka</i>
<i>Bahya karma</i>	<i>sthambhana, tvagdosahara, daha prasamana.</i>	<i>varnya, dahanasaka, kustaghna, vrana ropana</i>	<i>sotahara, vedana stapaka, varnya, kustaghna, vrana sodana, vrana ropana, lekhana</i>

Table 5- Rasa, guna, virya, vipaka, dosa karma of thel kira